U.S. Fish & Wildlife Service

Currents

REGION 2 – SOUTHWEST REGION

Fisheries Program Highlights

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Thanks to a monumental effort among federal, state, private, non-governmental, and public partners, historic flows and native fish were returned to Fossil Creek, AZ.

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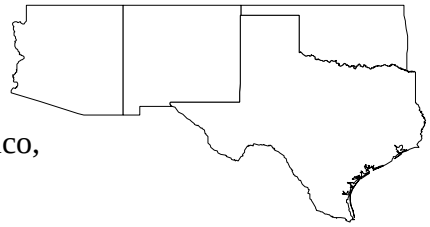
REGION 2 – SOUTHWEST REGION



The Southwest Regional Office, located in Albuquerque, New Mexico, administers 12 fisheries field stations in Arizona, New Mexico, Oklahoma, and Texas.

The Division of Fishery Resources in the Southwest encompasses 3 Fishery Resources Offices, 5 National Fish Hatcheries, 3 Fish Technology Centers, and 1 Fish Health Center. The Division of Fishery Resources also has responsibility to control aquatic invasive species.

Fishery Resources Offices

The 3 Fishery Resources Offices (Arizona Fishery Resources Office, New Mexico Fishery Resources Office, and Oklahoma Fishery Resources Office) evaluate wild native fish stocks and their habitats, and where feasible, work with partners to restore habitats and fish populations.

These offices provide technical fish management assistance to tribes and other partners with a primary focus on native and interjurisdictional species.

National Fish Hatcheries

The National Fish Hatcheries (Willow Beach, Alchesay-Williams Creek, Uvalde, Tishomingo, and Inks Dam) develop and maintain brood stocks of important fish species, both sport fishes and critically imperiled non-game fishes. The hatcheries are the source of fish and eggs distributed to partners with similar aquatic conservation missions, such as native fish restoration or fulfilling federal mitigation responsibilities.

Hatcheries are often called upon to provide a place of refuge for imperiled aquatic organisms, such as aquatic plants and amphibians.

Fish Technology Centers

The Fish Technology Centers (Dexter, Mora, and San Marcos) develop leading-edge technology for use by tribal, state, and federal fish hatcheries and fishery biologists to make fish culture more productive, cost-effective, and scientifically sound.

Technology improves hatchery efficiency, helps assure the genetic integrity of fishes, at the same time minimizing the effects of hatchery fish on wild fish stocks.

Private aquaculture industry also benefits from scientific information generated by the Fish Technology Centers.

Fish Health Center

Pinetop Fish Health Center biologists assess the well-being of fish that live in the wild or are raised at hatcheries. Fish health biologists are highly trained in various scientific disciplines, like immunology, epidemiology, toxicology, and genetics. They apply that knowledge in fish health assessments that might lead to early detection of potentially devastating diseases, prescribing preemptive measures.

The National Wild Fish Health Survey allows biologists to assess wild stocks and to share scientific findings with other scientists or the public through a national database.

Fish health assessments at state and federal hatcheries promote good fish culture and ultimately better, healthier fish stocks.

The U.S. Fish & Wildlife Service's fish health program takes a proactive and cooperative approach, networking with other health professionals to ensure healthy fisheries.

CONSERVING AMERICA'S fisheries

Historic Flows and Native Fish Assemblage Returned to Fossil Creek, AZ

The Arizona FRO, along with federal, state, private, non-governmental, and public partners, worked many long hours salvaging native fishes prior to chemically removing non-native fishes, all in an effort to restore the historic native fish assemblage once found in Fossil Creek, AZ. Over 1,200 native fishes were collected during salvage efforts coordinated by the Arizona FRO. Salvaged fish were flown via helicopter from streamside to a temporary hatchery facility located at the Irving power plant, where they were held until after the stream was renovated, and then returned to the stream.

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A Bureau of Reclamation helicopter transports native fish from streamside to temporary holding facility at Irving power plant.

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Once renovated, salvaged native fish were returned to Fossil Creek.

Fish salvage, renovation, and reintroduction efforts took place in the upper reaches of Fossil Creek, while downstream a man-made barrier was being constructed to prevent future invasions of non-native fishes that may move upstream from inhabited reaches below. Upon reestablishing a native fish assemblage and completion of the man-made barrier, the Irving and Childs power plants, owned and operated by the Arizona Public Service, will be decommissioned, returning historic flows back into the stream channel.

Pam Sponholtz, Arizona FRO

-USFWS
Removal of this diversion dam will be the first step in restoring historic flows to Fossil Creek.

Uvalde National Fish Hatchery Maintains Pupfish Broodstock

The Uvalde National Fish Hatchery continued to maintain a captive population of Comanche Springs pupfish *Cyprinodon elegans*, which was federally listed as endangered in 1967. The captive population is a safeguard against the threats of extinction due to competition and predation from other species; degradation of genetic integrity caused by hybridization with introduced congeners (e.g., *C. variegatus*); and habitat loss from reduced spring flows and surface waters.

Jae Ahn, Uvalde NFH

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From bucket to pond, endangered Comanche springs pupfish are kept on station at Uvalde, safeguarding against extinction.

Tishomingo National Fish Hatchery Continues Paddlefish Recovery Efforts

The native paddlefish population in the Red River was fragmented following construction of Denison Dam in the 1930s. Paddlefish were considered to be extirpated from

the waters above the dam by the mid 1950s. The Tishomingo National Fish Hatchery recently released over 22,000, 14 inch paddlefish into the waters above Denison Dam in order to continue efforts to re-establish a self-sustaining paddlefish population. This is the first year that Tish was able to meet the numbers required in the annual stocking plan. This successful stocking year was due to improved spawning and rearing techniques which were developed at this facility, improvements to culture units, and the donation of over 1,200 volunteer hours.
Kerry Graves, Tishomingo NFH

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Improved spawning and rearing techniques allow Tishomingo NFH to meet annual stocking numbers of endangered paddlefish for the first time.

Pinetop Fish Health Center Performs Tribal Hatchery's First Inspection

On October 13, 2004 the Pinetop Fish Health Center conducted a fish health inspection for the Mescalero Apache Tribe's Mescalero Tribal Fish Hatchery in New Mexico. This facility had once been a Fish and Wildlife Service hatchery but was closed down several years ago. The Tribe has reopened the hatchery and is culturing trout there. Because the Tribe has no fish health lab, the Pinetop Fish Health Center partnered with the Tribe to provide a hatchery inspection. Without a valid inspection, the fish could not be transported off of the Reservation. With the completion of a clean inspection, fish are now being stocked into the waters of other New Mexico Tribes from the Mescalero Tribal Fish Hatchery.
Phil Hines, Pinetop FHC

-USFWS
Mike Montoya, Tribal Hatchery Manager, and Jason Woodland, PFHC Biologist, work together to complete hatchery inspection prior to stocking.

-USFWS
Once fragmented, habitat for Ouachita shiner and leopard darter is now open thanks to Oklahoma FRO and Hancock Forest Management.

Oklahoma FRO Works with Hancock Forest Management to Improve Fish Passage

The Oklahoma FRO enhanced fish passage by replacing undersized culverts with oversized box culverts at two sites in the Little River drainage. This project facilitated the genetic exchange between fragmented populations of Ouachita shiner, a species of concern, and the leopard darter, federally and state threatened species, by removing barriers to fish passage. This project also enhanced recreational fishing for smallmouth bass and spotted bass within the affected system. One-half mile of fragmented habitat has been reconnected thanks to a challenge cost share between the USFWS and Hancock Forest Management.
Brent Bristow, Oklahoma FRO

Mora National Fish Hatchery and Technology Center Continues Gila Trout Recovery Efforts

Mora National Fish Hatchery and Technology Center completed its Gila Trout distribution for the year. Two trips to the Gila National Forest were completed, stocking Main Diamond Lineage fish. Both Black Canyon and White and Little creeks were stocked with 2,160 '03 and 445 '04 fish. The '03 fish were held over from the previous year as there was insufficient habitat for planned recovery stocking. The '03 fish averaged 7.5 inches in length and the '04 fish averaged 2.8 inches.
John Seals, Mora NFH&TC

-USFWS
Gila trout are returned to the wild

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Phase II Gulf striped bass being stocked by Inks Dam NFH into the Tchefuncte River, LA.

Inks Dam NFH Contributes to Gulf Striped Bass Restoration and Recovery to Coastal River

In 2004 Inks Dam National Fish Hatchery produced 4,476 9 inch phase II Gulf striped bass for the Tchefuncte River in Louisiana to aid in restoration and recovery purposes for this important commercial and recreational fishery. Gulf striped bass have historically been an important commercial and recreational fish in the Gulf Coast region. However, dam construction and habitat modification/degradation, as well as overfishing, have resulted in poor recruitment in wild populations, and augmentation has become necessary. Monitoring efforts have identified survival and recruitment ratios of 55 to 1 in favor of phase II stockings. Inks Dam NFH has actively participated in the Gulf striped bass restoration and recovery program for a number of years and will continue to do so by producing phase II fish for this important effort. This participation is in cooperation with Region 4, Louisiana Department of Wildlife and Fisheries, and the Gulf Coast States Marine Fishery Commission.
Marc Jackson, Inks Dam NFH

30,000th Hatchery-Raised Bonytail released into Lake Havasu – Colorado River

The 30,000th hatchery-raised bonytail *Gila elegans*, was released into the Colorado River (Lake Havasu) in December 2004 as part of the U.S. Fish and Wildlife Service federal mandate to conserve, protect and enhance fishery resources. The Lake Havasu Fisheries Improvement Program implemented this warm-water project and includes seven partners, the Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service, Arizona Game and Fish Department, California Department of Fish and Game, Metropolitan Water District of Southern California, and Anglers United.

Bonytail is one of the most imperiled freshwater fish species persisting primarily as a small population in the lower Colorado River basin. Few individuals have been collected in the last decade and recruitment of young into the adult size-class is rare to non-existent. The decline of this species is related to water resource development, and the associated habitat loss and modification. Additionally, the introduction of nonnative fishes has altered the fish community dramatically and contributed to bonytail population decline.

Bonytail are spawned at the Dexter National Fish Hatchery and Technology Center and offspring are reared at the Willow Beach National Fish Hatchery to a size (250 mm) that help these fish escape predators. Stocking of bonytail into Lake Havasu and other areas of the Colorado River continue in an effort to restore and maintain this species at self-sustaining levels.
Chester R. Figiel, Jr., Willow Beach NFH

-USFWS
Bonytail captured during annual "round up" efforts that originated from Willow Beach NFH.

Pahranagat Roundtail Chub Released into a Nevada Wildlife Management Area Refugium

The Pahranagat roundtail chub *Gila robusta jordani*, was listed as endangered in 1970, primarily due to competition with non-native fishes and habitat loss. For all practical purposes, the species is extinct in the wild and recovery efforts require augmentation from captive broodstock being maintained at the Dexter National

Fish Hatchery and Technology Center. Dexter is the only facility to have successfully spawned and raised Pahranagat roundtail chub in captivity. On December 15, 2004, 1,000 4 inch chub survived the 900 mile journey from NM to NV before being stocked into a ½ acre pond located on the Key Pittman Nevada Wildlife Management Area, marking the first ever reintroduction of this species into newly created habitat. All fish were 1 year old and marked with a wire tag for future identification. This accomplishment was made possible through a cooperative effort among the Service's Region 2 Dexter National Fish Hatchery and Technology Center, Region 1 Southern Nevada Field Office, and the Nevada Division of Wildlife.

Manuel Ulibarri, Dexter NFH&TC

-USFWS
Pahranagat roundtail chub broodstock maintained at Dexter NFH&TC are instrumental in this species' recovery.

Williams Creek National Fish Hatchery Undergoes Much Needed Renovations

Installation of microscreen filtration for hatchery effluent, a UV system on the main intake pipe for the tankhouses, and new oxygen generators completed the much needed renovations of the Williams Creek NFH. The microscreen filtration of hatchery effluent should help the hatchery meet their goal of effluent discharge limits. The UV system will alleviate bacterial infections that have been plaguing fry and fingerlings, especially Apache trout, reared in the tankhouses. The oxygen generation system is now supplying oxygen to three Low Head Oxygen (LHO) units, allowing water supersaturated with oxygen to flow to four banks of outside rearing units. The new system replaces a tabletop system that supplied oxygen to one LHO unit for one bank of rearing units.

Sherry White, Williams Creek NFH

-USFWS
The old tabletop oxygen generators (top) were replaced by a new, larger system (bottom), quadrupling the number of rearing units receiving supersaturated oxygen.

-USFWS
NMFRO staff stock Rio Grande silvery minnow in an effort to augment the existing population in the Middle Rio Grande Valley.

New Mexico FRO Continues Augmentation and Monitoring of the Rio Grande Silvery Minnow within the Middle Rio Grande Valley

Nearly 60,000 endangered Rio Grande silvery minnow *Hybognathus amarus*, were stocked into the Rio Grande near Albuquerque, NM. The Region 2 Fisheries Program, lead for all captive propagation and augmentation efforts for Rio Grande silvery minnow, provided about 33,000 fish raised at Dexter National Fish Hatchery and Technology Center (DNFHTC). An additional 26,000 fish were provided by City of Albuquerque (COA) facilities for the stocking efforts. Biologists from New Mexico Fishery Resources Office, with support from DNFHTC, the COA and other FWS personnel, used rafts and fish transport containers to strategically place fish in low velocity habitats along channel margins in the Rio Grande from the town of Bernalillo downstream approximately 15 river miles. Such placement of fish contributes to increased

survivability of the stocked fish by allowing time for acclimation in protective habitats. Monitoring data indicate that stocked fish are surviving, accounting for more than one third of all adults sampled during monitoring efforts. The increase in number of young Rio Grande silvery minnow collected during monitoring and salvage/transplant efforts is due in part to the successful stockings, along with increased number of days of high flows in 2004.

Jason Davis, New Mexico FRO

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One of many gravid female Rio Grande silvery minnow held at a holding facility at NMFRO before being released into the wild.

Aggressive Behavior in Captive Threatened Minnows Observed by San Marcos National Fish Hatchery and Technology Center Biologists

Biologists at San Marcos National Fish Hatchery and Technology Center recently noticed a strange coincidence in their tanks of threatened Devils River minnows *Dionda diaboli*.

Often, each mortality seemed to be the exact same kind of fish; a large, colorful, blue male with yellow fins and breeding tubercles. Why weren't females or smaller males dying at the same frequency? To answer this question, biologists decided to focus on some often overlooked aspects of reproductive behavior.

Laboratory studies involving pairs, small groups, and large groups of Devils River minnows revealed intense territorial behavior when presented with a suitable spawning substrate. Furthermore, males exhibited a plethora of displays varying from simple chases to elaborate dances used to settle highly escalated contests. These displays are accompanied with secondary sexual characteristics that form upon reaching maturity such as the presence of breeding tubercles and bright coloration in the form of yellow on all of the fins, and blue across the face and body. When excited during courtship, or when trying to settle an agonistic dispute, these colors will intensify on already colorful males and appear on previously drab males. Females may use these color signals to choose a suitable mate to increase their reproductive success. A better understanding of these relationships revealed that the large and colorful males that kept turning up dead in hatchery tanks were fighting with other large and equally colorful males, resulting in high stress and early death.

What does this mean for refugium populations? For future propagation of this species and other territorial broadcasters, it may not be as simple as placing a group of fish together and hoping they spawn. Given the limited spawning habitat and reduced size of a typical hatchery tank (compared to the wild), males of the same size and condition may fight to the death. Also, as observed with Devils River minnows, males may become so aggressive in this type of environment that they do not spend any energy spawning at all. This means that care must be taken in the placement of males in small tanks to avoid high mortality. A closer look at the relationships of fish within hatchery tanks may reveal a more complex system that previously suspected.

Joe N. Fries, San Marcos NFH&TC
Catherine T. Phillips, Auburn University

-USFWS
Devils River minnow

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